


CLEAN CLAIMS ARE AS FOLLOWS

1 1. (Original) A fiber optic module comprising:
2 a pull-actuator to disengage and withdraw the fiber optic
3 module from a cage assembly; and
4 one or more electro-optic transducers to convert optical
5 signals into electrical signals or electrical signals into
6 optical signals.



1 2. (Original) The fiber optic module of claim 1 wherein
2 the fiber optic module is a small form pluggable (SFP)
3 fiber optic module and the cage assembly is a small form
4 pluggable (SFP) cage assembly.

1 3. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator is activated to disengage and withdraw
3 the fiber optic module by a single backward pull action.


1 4. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator includes one or more grooves to
3 slideably engage the fiber optic module.

1 5. (Original) The fiber optic module of claim 1 wherein
2 the fiber optic module includes one or more grooves to
3 slideably engage the pull-actuator.

1 6. (Original) The fiber optic module of claim 1 wherein

2 the pull-actuator slides to disengage the fiber optic
3 module from the cage assembly.

1 7. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator includes,
3 one or more end-stops to withdraw the fiber optic
4 module as the pull-actuator is pulled.

1 8. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator includes
3 one or more end-stops to prevent the pull-actuator
4 from becoming disengaged from the fiber optic module as it is
5 pulled.

1 9. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator includes
3 a pull-tab,
4 a shaft coupled to the pull tab at a first end, and
5 an opening at a second end of the shaft to engage a
6 first end of a pivot arm.


1 10. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator includes
3 an orientation indicator to indicate the fiber optic
4 module which the pull-actuator releases.

1 11. (Original) The fiber optic module of claim 1 wherein

2 the pull-actuator is formed of metal.

1 12. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator is formed of a plastic.

1 13. (Original) The fiber optic module of claim 1 further
2 comprising:

3 a pivot-arm actuator, pivotally coupled to the fiber
4 optic module, to release the fiber optic module from the cage
 assembly when the pull-actuator is pulled.

1 14. (Original) The fiber optic module of claim 13 wherein
2 the pivot-arm actuator further includes,

3 a pivoting pin to rotationally couple the pivot-arm
4 actuator to the fiber optic module.

1 15. (Original) The fiber optic module of claim 13 wherein
2 the pivot-arm actuator includes

3 a first engaging end to engage to the cage assembly,

4 a second engaging end to engage to the pull-

5 actuator, and

6 a shaft coupling to the first and second engaging

7 ends.


1 16. (Original) The fiber optic module of claim 15 wherein

2 the first engaging end includes a keeper to engage the

3 fiber optic module to the cage assembly.

1 17. (Original) The fiber optic module of claim 15 wherein
2 the first engaging end includes a latch to engage the
3 fiber optic module to the cage assembly.

1 18. (Original) The fiber optic module of claim 15 wherein
2 the second engaging end includes a keeper to engage the
3 pivot-arm actuator to the pull-actuator.


 1 19. (Original) The fiber optic module of claim 15 wherein
2 the second engaging end includes a latch to engage the
3 pivot-arm actuator to the pull-actuator.

1 20. (Original) The fiber optic module of claim 15 wherein
2 the second engaging end includes a ramped sliding surface
3 to slide and cause the pivot-arm actuator to rotate when the
4 pull-actuator is pulled.

1 21. (Original) The fiber optic module of claim 13 further
2 comprising:
3 a spring to cause the pivot-arm actuator to return to its
4 initial position when the pulling force on the pull-actuator
5 is removed.


1 22. (Original) The fiber optic module of claim 21 wherein
2 the spring is a leaf spring and part of the pivot-arm
3 actuator.

1 23. (Original) The fiber optic module of claim 21 wherein
2 the spring causes the pull-actuator to return to its
3 initial position when the pulling force on the pull-actuator
4 is removed.

 1 24. (Original) The fiber optic module of claim 1 wherein
2 the pull-actuator permits arranging multiple fiber optic
3 modules in a belly-to-belly configuration without obstructing
4 adjacent pull-actuators.

1 25. (Original) The fiber optic module of claim 24 wherein
2 with the belly-to-belly configuration, two pull-actuators are
3 located in proximity to each other along a common surface
4 between two fiber optic modules.

1 26-49. (Cancelled)

1 50. (Original) A fiber optic module comprising:
2 means for converting optical signals into electrical
 3 signals or electrical signals into optical signals; and
4 means for disengaging the fiber optic module from a cage
5 assembly by pulling a pull-actuator.

1 51. (Original) The fiber optic module of claim 50 further
2 comprising:

3 means for slideably engaging the means for disengaging
4 the fiber optic module.

1 52. (Original) The fiber optic module of claim 50 wherein
2 the means for disengaging also provides a means for
3 withdrawing.

1 53. (Original) The fiber optic module of claim 50 further
2 comprising:

3 means for withdrawing the fiber optic module.

1 54. (Original) The fiber optic module of claim 50 further
2 comprising:

3 means for pivotally disengaging the fiber optic module
4 from a cage assembly when the pull-actuator is pulled.

1 55. (Original) The fiber optic module of claim 54 further
2 comprising:

3 means for coupling the pivotally disengaging means to the
4 fiber optic module.

1 56. (Original) The fiber optic module of claim 50 further
2 comprising:

3 means for indicating the fiber optic module which the
4 means for disengaging releases.

1 57. (Original) A method for disengaging and withdrawing a
2 fiber optic module from a cage assembly comprising:
3 pulling a pull-actuator to disengage the fiber optic
4 module from the cage assembly; and
5 continuing to pull on the pull-actuator to withdraw the
6 fiber optic module from the cage assembly.

1 58. (Original) The method of claim 57 comprising:
2 releasing the pull-actuator if the fiber optic module has
3 been released from the cage assembly.

1 59. (Original) A fiber optic module comprising:
2 a nose receptacle including
3 a fiber optic cable receptacle to receive one or
4 more fiber optic cable plugs,
5 a pull-actuator to release the fiber optic module
6 from a cage assembly using a pull action;
7 a pivot-arm actuator coupled to the pull-actuator,
8 the pivot-arm actuator to pivot and release a keeper from a
9 latch to release the fiber optic module in response to a pull
10 action on the pull-actuator; and
11 a printed circuit board including one or more
12 electro-optic transducers to convert optical signals into
13 electrical signals or electrical signals into optical signals.

1 60. (Original) The fiber optic module of claim 59
2 wherein,
3 the fiber optic module is a small form pluggable (SFP)
4 fiber optic module and the cage assembly is a small form
5 pluggable (SFP) cage assembly.

1 61. (Original) The fiber optic module of claim 59 further
2 comprising:


32 3 a housing to couple to the nose receptacle and cover the
4 printed circuit board.

1 62. (Original) The fiber optic module of claim 61
2 wherein,
3 the housing is shielded to protect the printed circuit
4 board from electromagnetic interference.

1 63. (Original) The fiber optic module of claim 59
2 wherein,
3 the pull-actuator includes one or more grooves to
4 slideably engage the nose receptacle.

1 64. (Original) The fiber optic module of claim 59
2 wherein,
3 the pull-actuator slides outward to release the fiber
4 optic module from the cage assembly.

1 65. (Original) The fiber optic module of claim 59
2 wherein,
3 the pivot-arm-actuator includes
4 a pivot pin rotationally coupled to the nose receptacle
5 at first and second ends to allow the pivot-arm actuator to
6 pivot.


 1 66. (Original) The fiber optic module of claim 59 wherein
2 the nose receptacle further includes
3 a spring coupled to the pivot-arm-actuator at a first end
4 and the nose receptacle at a second end, the spring to exert a
5 force on the pivot-arm-actuator to exert a return force on the
6 pull-actuator.

1 67. (Original) The fiber optic module of claim 59
2 wherein,
3 the pull-actuator includes
4 an orientation indicator to indicate the fiber optic
5 module which the pull-actuator releases.

1 68. (Original) The fiber optic module of claim 59
2 wherein,
3 the pull-actuator includes
4 a pull-tab,
5 a shaft coupled to the pull-tab at a first end, and
6 a catch at a second end of the shaft.

1 69. (Original) The fiber optic module of claim 59
2 wherein,
3 the pull-actuator is located at a bottom side of the
4 fiber optic module.

1 70. (Original) The fiber optic module of claim 59
2 wherein,
3 the nose receptacle further includes
4 a grip to pull out on the fiber optic module.



1 71. (Original) A configuration of fiber optic modules
2 having one or more electro-optic transducers, the
3 configuration comprising:
4 a printed circuit board having a first side and a second
5 side;
6 a first cage coupled to the first side of the printed
7 circuit board to receive a first fiber optic module; and
8 a second cage coupled to the second side of the printed
9 circuit board to receive a second fiber optic module, the
10 second cage aligned in parallel to the first cage such that a
11 first belly of the first fiber optic module is adjacent a
12 second belly of the second fiber optic module.

1 72. (Original) The configuration of claim 71 wherein,

2 the first belly of the first fiber optic module being
3 adjacent to the second belly of the second fiber optic module
4 provides for increased density.

1 73. (Original) The configuration of claim 71, further
2 comprising:

3 the first fiber optic module having a first pull-actuator
4 with a first orientation indicator;

5 the second fiber optic module having a second pull-
6 actuator with a second orientation indicator; and

7 the first pull-actuator and the second pull-actuator each
8 having a pull-tab offset from each other when the first belly
9 is adjacent the second belly.


1 74. (Original) The configuration of claim 73 wherein,
2 the first orientation indicator indicates the first fiber
3 optic module and the second orientation indicator indicates
4 the second fiber optic module.

1 75. (Original) The configuration of claim 73 wherein,
2 the pull-tab is a pull button.

1 76. (Original) The configuration of claim 73 wherein,
2 the pull-tab is a pull knob.

1 77. (Original) The configuration of claim 73 wherein,
2 the pull-tab is a pull hook.

1 78. (Original) The configuration of claim 73 wherein,
2 the pull-tab is a pull ring.

 1 79. (Original) The configuration of claim 73 wherein,
2 the pull-tab is a pull square.

1 80. (Original) The configuration of claim 73 wherein,
2 the pull-tab is a pull mechanism.
